LIVERMORE LAB REPORT

A weekly review of scientific and technological achievements from Lawrence Livermore National Laboratory, June 3-7, 2013.

NBC IT'S ABOUT TIME

From left: Steve Maguire, who won in the video category of the 2013 Flame Challenge, Alan Alda and Nick Williams of Lawrence Livermore, who won in the written category.

How would you explain the concept of time to a fifth grader?

Nick Williams, a retired engineer and science presenter from Lawrence Livermore, certainly knows how and he has been recognized for it by taking honors in the written category of The Flame Challenge, a global science contest run by the Alan Alda Center for Communicating Science at Stony Brook.

"I put myself in one of my 5th grade students' shoes," Williams said about his winning entry. "What I wrote is an off-the-cuff response, not relying on the Web or digging through time-related research. The explanation is what made sense to me, and what I thought a 5th grader could understand at this 'time' in his/her science education."

To read more, go to NBC.

Silicon Valley MercuryNews.com

REINVENTING THE WHEEL AGAIN AND AGAIN

Dick Post has devoted most of his 94 years to science.

At 94, Dick Post has worked a lifetime and then some. The Lawrence Livermore retiree physicist still works four days a week, driving himself to the Lab from his home in Walnut Creek.

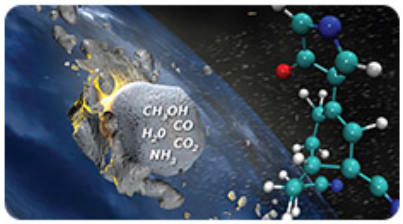
Nearly 20 years after he "retired," he spends his workdays tackling complex equations with a yellow pad and a laptop running a sophisticated math program.

Not only is Post excited about his work, but he is doing groundbreaking science. His latest project -- perfecting a prototype of his lightweight "flywheel," a cylindrical, rotating battery -- could revolutionize the energy industry, storing and creating energy better than any conventional electrobattery on the planet.

To read more, go to *Mercury News*.

SCIENCE CODEX

WHAT A SHOCK



Comets may have helped jump start life on Earth.

Early Earth was not very hospitable when it came to jump starting life. In fact, new research shows that life on Earth may have come from out of this world.

Lawrence Livermore scientist Nir Goldman and University of Ontario Institute of Technology colleague Isaac Tamblyn (a former LLNL postdoc) found that icy comets that crashed into Earth billions of years ago could have produced life-building organic compounds, including the building blocks of proteins and nucleobases pairs of DNA and RNA.

Comets contain a variety of simple molecules, such as water, ammonia, methanol and carbon dioxide, and an impact event with a planetary surface would provide an abundant supply of energy to drive chemical reactions.

"The flux of organic matter to Earth via comets and asteroids during periods of heavy bombardment may have been as high as 10 trillion kilograms per year, delivering up to several orders of magnitude greater mass of organics than what likely pre-existed on the planet," Goldman said.

To read more, go to *Science Codex*.

YAHOO! NEWS CLEAN GREEN MACHINE

Livermore scientists have discovered a new method that may save the world's marine ecosystems by offsetting ocean acidification. The Great Barrier Reef already has been affected by acidification.

When you put together salty water, silicate minerals and some electrical current, you might get a potential solution to some of the world's most vexing energy problems.

A new study outlines a way to produce hydrogen while also capturing carbon dioxide and producing a base that could be used to offset or neutralize ocean acidification.

First, you apply electricity to salty water. This well-studied technique, called electrolysis, breaks water into oxygen and hydrogen gas, said Greg Rau, study co-author and researcher at Lawrence Livermore.

While this is happening, acid is produced at the negative end of the electrode, called the anode. Usually, after the current stops being applied, the acid recombines with the base (hydroxide) produced at the electrode's positive end (cathode), turning back into water.

To read more, go to *Yahoo*.

THEY HAVE A DREAM

Mark Stoyer addresses the crowd during his keynote talk during the chamber luncheon/awards ceremony.

The Laboratory team behind the discovery of element 116, Livermorium, on the periodic table was honored as one of the Livermore Chamber of Commerce's top Dream-makers and Risk-takers for 2013.

Mark and Nancy Stoyer and Jerry Landrum accepted the award on behalf of the 11 researchers who make up the team. Mark Stoyer also provided the keynote address during the chamber luncheon/awards ceremony, last week.

Stoyer described the diligence and dedication of the team members as they worked on the project, a collaboration between the Lab and scientists from the Flerov Laboratory of Nuclear Reactions at the Joint Institute for Nuclear Research in Dubna, Russia. Together the team discovered two elements -- 114

and 116 (114 has been named Flerovium).

"It's every chemist's dream to put an element on the periodic table," Stoyer said.

There will be a special celebration to commemorate Livermorium on June 24 in downtown Livermore, and May 30 now will be noted as Livermorium Day in Livermore. The element's name was adopted on May 30, 2012.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance. To send input to the *Livermore Lab Report*, send e-mail.